

Permitting decisions

Bespoke permit

We have decided to grant the permit for Willand Anaerobic Digester operated by Willand O&M Limited. The permit number is EPR/WP3533AJ.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Purpose of this document

This decision document provides a record of the decision making process. It summarises the decision making process in the decision checklist to show how all relevant factors have been taken in to account.

This decision document provides a record of the decision making process. It:

- highlights key issues in the determination
- summarises the decision making process in the decision checklist to show how all relevant factors have been taken into account
- shows how we have considered the consultation responses.

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Read the permitting decisions in conjunction with the environmental permit. The introductory note summarises what the permit covers.

Key issues of the decision

The applicant (now operator) was originally GFLE Willand O&M Limited and changed its name to Willand O&M Limited, company registered number 10967093; the registered office address, scope of operation and staff structure at the installation remains the same. The new company took effect on 18th September 2017.

1. Environment Agency Position Statement

The Applicant (now the operator) has applied for an environmental permit that will allow the operation of an anaerobic digestion (AD) facility with the upgrading and combustion of the resultant biogas. The operator reports that that only grass silage, maize silage, beet and wheat grain (non waste) will be accepted as feedstock for the digesters during commissioning and for at least the first 6 months following commissioning.

The Environment Agency's position statement "Anaerobic Digestion and Environmental Permitting" (dated April 2010) specifies that:

Any crop which is grown specifically for digestion in an AD plant is not waste. If the input materials to an AD plant are non-wastes, the status of each output materials as a waste or non-wastes will depend on the circumstances. Assuming that the main purpose of the plant is to recover energy from the biogas produced, the biogas will be a non-waste. In order to classify the “digestate” as a non-waste, it must meet three tests:

- it must be certain to be used
- without any prior processing and;
- as part of a continuing process of production

In these circumstances, an environmental permit would not be required.

We consider manure and slurry used as feedstock for AD to be wastes. If manure and/or slurry is digested together with energy crops, the overall feedstock is waste and subject to environmental control (via an environmental permit).

In view of the above position statement, an environmental permit is not required for this facility if using non-waste feedstock. In addition, the facility will not require an environmental permit in the event the operator accepts crop residues as feedstock in accordance with the Environment Agency’s Briefing Note – Crop residues used as feedstocks in anaerobic digestion plants (dated September 2014).

The conditions in this permit shall come into force in the event the operator accepts wastes specified in Table S2.2 for treatment via AD at this facility. We have included a Pre-operational Condition 1 (PO2) that requires the submission of a commissioning plan to ensure that appropriate measures are in place to protect the environment and human health when using waste at the facility.

As the application is for an environmental permit that allows the acceptance and treatment of waste and non-waste feedstock, subsistence charging shall commence once the permit is issued.

2. Site description and activities being undertaken

In the original applications conflicting information was provided regarding the annual throughput, the types of waste being treated, the equipment being used and its location.

In the final submission of the 26/06/17 the applicant confirmed that the site is an anaerobic digestion plant, designed to process 55,000 tonnes per year of biodegradable wastes, namely farm yard manure and Vegetable matter (energy crops), Maize silage, Grass silage (non-waste), Wheat grain, Fodder. No Animal by Products will be processed.

Agricultural feedstocks, including crops and manures, will be transported into reception building and fed into a solids feeder using a telehandler or liquid buffer tank where it is then macerated and preheated to 60°C before being transferred to the 2 digester tanks.

The digesters are designed to operate just above mesophilic conditions (approximately 40°C). Air is injected into the top of the digester to remove hydrogen sulphide in the biogas. The biogas produced is stored in gas holders above both digesters. The majority of organic material is converted to biogas with a methane content of approx 63%.

The biogas is then sent to the 500kWth CHP unit to produce electricity and heat for use on site. Excess biogas will be upgraded using a PURAC gas upgrade plant to bio-methane which will be injected into the national grid. Biogas which cannot be supplied to the network for reasons of quality is diverted to the CHP plant. A backup flare will also operate as necessary during site maintenance or in the event of a breakdown of the CHP plant.

There are 2 digestate stores (single process fermenters) on site with a capacity of 4,157m³ each. These stores are fitted with gas holders above them to capture any potential gas from the material within the store.

There are emissions to air from gas CHP boiler providing electricity and heat for the site, the biofilter, auxiliary (emergency) gas flare, upgrading unit and emergency tank vents. Contaminated process waters will be tankered offsite.

There is also an emission of clean uncontaminated surface water to an attenuation pond.

3. Site plan

The Applicant submitted a plan as part of the application documents which we considered unsatisfactory, due parts of the plan not being legible. A revised plan including site drainage and point source emissions to air and surface water was submitted (as part of the schedule 5 response) on 26/06/2017 which we considered satisfactory. This plan is included in Schedule 7 to the Permit, and the Operator is required to carry on the permitted activities within the site boundary.

4. Assessment of Impact on Air Quality

The Applicant's assessment of the impact of air quality is set out in the application and a schedule 5 response dated 14/11/2016 - Air Quality Impact Assessment of a Combined Heat and Power Biogas Engine at the Willand Anaerobic Digestion Plant. The assessment comprises:

- An H1 screening assessment of emissions to air from the operation of the facility;
- Dispersion modelling of emissions to air from the operation of one CHP engine; and
- A study of the impact of emissions on nearby sensitive habitat/conservation sites.

The assessment considered the emissions arising from one operating scenario at the facility as follows:

Scenario 1: one CHP engine (a single Jenbacher J316 biogas engine) with a stack height of 5.5 metres operating continuously for 8,760 hours per annum.

This section of the decision document deals primarily with the dispersion modelling of emissions to air from the stack and its impact on local air quality and conservation sites. These assessment predicts the potential effects on local air quality from the facilities stack emissions using the ADMS-5.1 dispersion model, which is a commonly used computer model for regulatory dispersion modelling.

Meteorological data for the assessment comprises five years continuous monitoring from Dunkeswell Aerodrome station (2010-2014). The Applicant considered this station as the most suitable source of meteorological data due to its general location being the closest to the site and the surface characteristics to the facility are similar to Dunkeswell are. The impact of the terrain surrounding the site and buildings upon plume dispersion was considered in the dispersion modelling. As well as calculating the peak ground level concentration, the Applicant has calculated the impact at 20 locations within the surrounding area of the facility.

The pollutants considered in the assessment are those associated with combustion activities, namely nitrogen dioxide, sulphur dioxide, carbon monoxide and total volatile organic compounds (VOCs). We are satisfied that there is no need to consider any other pollutants, as the fuel is biogas derived from source-segregated biodegradable waste.

As well as calculating the peak ground level concentration, the Applicant has modelled the concentration of key pollutants at a number of specified locations within the surrounding area.

The way in which the Applicant used dispersion models, its selection of input data, use of background data and the assumptions it made have been reviewed to establish the robustness of the Applicant's air impact assessment. The output from the model has then been used to inform further assessment of health impacts and impact on habitats and conservation sites.

Our review of the Applicant's assessment leads us to agree with the Applicant's conclusions.

The Applicant's modelling predictions are presented in Table 1 below. The Applicant's modelling predicted peak ground level exposure to pollutants in ambient air and at discreet receptors. The tables below show the ground level concentrations at the most impacted receptor.

Whilst we have used the Applicant's modelling predictions in the table below, we have made our own simple verification calculation of the percentage process contribution and predicted environmental concentration. These are the numbers shown in the tables below and so may be very slightly different to those shown in the in the Application and Schedule 5 response. Any such minor discrepancies do not materially impact on our conclusions.

The assessment in this section focuses on the impact of nitrogen dioxide, sulphur dioxide and VOCs on human health. Emissions of carbon monoxide were screened out (insignificant), therefore are not included in this section.

Table 1 Maximum modelled pollutant concentrations at the most sensitive human receptor (Lloyd Maunder Road 5)

| Pollutant | EQS / EAL $\mu\text{g}/\text{m}^3$ | Back-ground, $\mu\text{g}/\text{m}^3$ ^[note1] | Process Contribution (PC) | PC as % of EAL | Predicted Environmental Concentration (PEC) ^[note 1] | PEC as % of EQS |
|---|------------------------------------|--|---------------------------|----------------|---|-----------------|
| CO (8 hour) | 10000 | 1516 | 937 | 9.37 | 2453 | 24.53 |
| CO (1 hour) | 30000 | 2168 | 1139 | 3.80 | 3307 | 11.02 |
| NO ₂ (1 hour) | 200 | 49.8 | 17.6 | 8.80 | 322.8 | 33.70 |
| NO ₂ (annual) | 40 | 24.9 | 2.6 | 6.50 | 78.1 | 68.75 |
| SO ₂ (15 min) | 266 | 3.2 | 3.99 | 1.50 | 59.9 | 2.70 |
| SO ₂ (1 hour) | 350 | 2.4 | 3.5 | 1.00 | 59.4 | 1.69 |
| SO ₂ (24 hours) | 125 | 1.4 | 2.38 | 1.90 | 32.6 | 3.02 |
| Benzene (annual) | 5 | 0.4 | 2.94 | 58.80 | 3.34 | 66.80 |
| Benzene (15 min) | 195 | 1.1 | 33.6 | 17.23 | 34.7 | 17.79 |
| NO (1 hour) | 4400 | 11.4 | 536 | 12.18 | 547.4 | 12.44 |
| NO (annual) | 310 | 5.7 | 49.7 | 16.03 | 55.4 | 17.87 |
| <p>^[note1] Where the PC is demonstrated to be less than 1% of the long term EAL and less than 10% of the short term EAL, a level below which we consider to indicate insignificant impact, examination of the background concentration and PEC is not required. For the assessment of short term impacts, the PEC is determined by adding twice the long term background concentration to the short term process contribution.</p> | | | | | | |

(i) Screening out emissions which are insignificant

From the tables above the following emissions can be screened out as insignificant in that the process contribution is < 1% of the long term ES and/or <10% of the short term ES. These are:

- CO, SO₂ (short term)

Therefore we consider the Applicant's proposals for preventing and minimising the emissions of these substances to be BAT for the Installation subject to the detailed audit referred to below.

(ii) Emissions unlikely to give rise to significant pollution

Also from the tables above the following emissions (which were not screened out as insignificant) have been assessed as being unlikely to give rise to significant pollution in that the predicted environmental concentration is less than 100% (taking expected modelling uncertainties into account) of both the long term and short term ES.

- NO₂, VOCs (as Benzene) and NO

For these emissions, we have carefully scrutinised the Applicant's proposals to ensure that they are applying the Best Available Techniques to prevent and minimise emissions of these substances. The applicant used benzene for their assessment of the impact of VOC. This is an over cautionary approach benzene concentrations are low in biogas derived from source-segregated and therefore emissions of VOC are likely to be much lower. In addition most VOCs will be combusted via the gas engines which reduces emissions and there are ELVs in place to ensure that the gas engines are compliant (1,000 mg/m³). The conclusion is that there will be no significant impact to human health caused by the operation of the AD facility.

The emissions of NO₂ from the CHP engine and boiler were derived from the manufacturer's data and not based on real-time operational monitoring data. No quantification of emissions (H₂S, SO₂ and VOCs) from the CHP engine, boiler and upgrading plant was provided with the Application.

We consider it appropriate to include Improvement Conditions IC1 and IC2 which require the operator to undertake a monitoring survey following the commissioning of the installation (using waste) to obtain actual (real-time) operational monitoring data from the CHP engine, boiler and biogas upgrading plant.

5. Waste types and quantities

As discussed in section 2 in the initial application documents the conflicting information was providing on the types of wastes to be processed. The applicant was requested via a Schedule 5 (dated 16th June 2016) to confirm the waste types and provide a full assessment on the suitability of each of the waste types applied. Though this was provided on the 7/10/16, a revision was made on the 08/12/2016 to include category 2 animal by-products, a request which was later withdrawn.

In the final response received on 27/04/2017 the applicant confirmed that the annual combined throughput of 55,000 tonnes per annum of waste and non-waste feedstock and only animal faeces, urine, manure including spoiled straw waste will be processed.

We are satisfied that the Applicant can accept this waste because:

- i. they are categorised as non-hazardous in the European Waste Catalogue and are capable of being safely treated via AD at the facility;
- ii. they are unlikely to contain harmful components that cannot be safely processed at the facility;
- iii. do not contain Category 1, 2 or 3 Animal By-Products;
- iv. an odour management plan is in place; and

We have specified the permitted waste types, descriptions and where appropriate, quantities which can be accepted at the facility in Table S2.1 in the Permit.

6. Emissions of Odour

AD plants are a significant source of odour by the nature of the activities undertaken at the installation. The site is in close proximity to sensitive receptors. The Applicant proposes to install an ammonia scrubber and biofilter to address odour emissions from the reception building. Odour emissions from the scrubber and biofilter were modelled using the air quality modelling software, ADMS (version 5.1). The odour source is the air collected from the treatment areas in the reception building. Results from the odour modelling for the closest residential receptors are presented in the table below.

Table 2 – Maximum modelled odour concentrations at sensitive receptors

| Sensitive Receptors | Modelled odour concentration ($C_{98\ 1\ \text{hour}}\ \text{ou}_E/\text{m}^3$) |
|----------------------|---|
| Lloyd Maunder Road 1 | 0.66 |
| Lloyd Maunder Road 2 | 0.41 |
| Lloyd Maunder Road 3 | 0.32 |
| Lloyd Maunder Road 4 | 0.33 |
| Lloyd Maunder Road 5 | 1.03 |
| Deanhill Farm | 0.02 |
| Burn Rew Farm | 0.02 |
| Rose Cottage | 0.01 |
| Willand Road 1 | 0.01 |
| Willand Road 2 | 0.02 |
| Willand Road 3 | 0.01 |
| Woodcoxhayes Farm | 0.01 |
| Ridgeway | 0.01 |
| Gagster Farm | 0.06 |
| Park Street | 0.01 |
| Barnes Close | 0.16 |
| Somerville Close | 0.22 |
| Tamars Drive | 0.24 |
| Maple Close | 0.24 |
| Tamarind | 0.42 |

The results show that the indicative criterion of $1.5\ \text{ou}_E/\text{m}^3$ was not exceeded at any of the receptor locations outside the site boundary. The emissions from the scrubber and biofilter are predicted to be not significant and unlikely to give any reasonable cause for annoyance due to odour. The Environment Agency audited the odour modelling and our results are in agreement with those of the Applicant. This is based on the plant operating at the parameters quoted in the modelling report.

BAT requirements embed the hierarchy of preventing, minimising, and capturing and treating odours to ensure the operator takes all reasonable steps to minimise the risk of odour pollution. The application of BAT and the implementation of a robust management system and Odour Management Plan (OMP) ensures that the risks are minimised as far as reasonably practicable.

The OMP included with the application was deemed to be insufficient and therefore a revised odour management plan in accordance with the Environment Agency's Horizontal Guidance H4 – Odour Management was requested. The revised odour management plan, submitted on 17/02/17 was also deemed to be insufficient and a further revised odour management plan was requested. The revised odour management plan, submitted on 26/06/17 and supporting documents Preliminary Report Biofilter Sizing dated 23/06/17 were deemed to be in-line with H4 guidance and have been incorporated into the permit in table S1.2.

The Applicant is required to operate at all times in accordance with the OMP to prevent pollution arising from odours and implement mitigation measures in line with the plan. We have also included an improvement condition, IC3. This requires the Operator to undertake a review of the effectiveness of the odour mitigation measures and undertake improvements where necessary.

7. Site Specific Bioaerosol Risk Assessment (SSBRA)

Before we grant a permit, the operator will need to satisfy us (through a suitable qualitative SSBRA) that site operations will not pose an unacceptable risk to the nearby sensitive receptors by having measures in place to prevent the uncontrolled release of high levels of bioaerosols.

At the time of making the submission there was no suitable methodology for carrying out adequate quantitative SSBRA for new AD facilities. The Applicant produced a SSBRA with reference to our 'Position Statement on Composting and the potential health effects from bioaerosols: our interim guidance for permit applicants' (V1.0 November 2010) as the AD plant will be within 250 metres of a 'sensitive receptor' (typically a dwelling or workplace). In this case, the AD plant will be within 250m of 9 sensitive receptors, 5 properties on Lloyd Maunder Road to the South East of site, Bagster Farm 190m south west of the site and properties on Park Street, Barnes Close and Somerville at approximately 220m.

The assessment was based on processing 80,000 tonnes of feedstock per year in 4 digesters and the use of a silage clamp. The clamp was identified to be the main source of bioaerosols release. With the exception of the emissions from the silage clamp the process contributions of bioaerosols were largely at or below the level at which the impact would be considered insignificant. The silage clamp is no longer part of the proposal and the annual throughput has reduced to 55,000 with just two digesters being used. We consider the assessment to be over precautionary.

We have audited the SSBRA and agree with the conclusions and accept that site operations will not pose an unacceptable risk to the nearby sensitive receptors by having measures in place to prevent the uncontrolled release of high levels of bioaerosols.

In line with Technical Guidance Note M9 -Environmental monitoring of bioaerosols at regulated facilities, published in January 2017 in the Permit we require, in Table S3.4 quarterly monitoring for bioaerosols at a minimum of three separate locations. We are requiring (as Pre-operational measure PO5) the Operator to submit a bioaerosols background sampling report to us for written approval at least 8 weeks before waste is accepted at the site. Bioaerosols threshold limits in Table 3.4 will be set following the completion of improvement condition IC4 which requires the operator to undertake a quantitative impact assessment (dispersion modelling) of emissions of bioaerosols (total bacteria and *Aspergillus fumigatus*) from the open bed biofilter after 6 months of operation taking waste.

8. Emissions to surface water

There are no emissions to surface water, the site is fully contained site with any contaminated water from operational areas being contained on site and recycled back into the process.

Uncontaminated roof water from the reception building, yard and roadway is harvested and will discharge into underground pipes, taking this water stream to the clean road drainage system and then an attenuation pond after passing through a hydrocarbon interceptor. Daily visual inspection will be undertaken of the bunded area, any rainwaters collected will be tested and where the pH and visual turbidity indicates no contamination excess clean waters will be discharged to the attenuation pond.

9. Fugitive emissions to air, land and water

Based upon the information provided, we are satisfied that appropriate measures are in place to prevent fugitive emissions to air, land and water.

The Applicant reports that above-ground tanks are cast in-situ concrete structures. The liner is a high-density polyethylene (HDPE) suitable for this application. The tanks will be installed with visual and audible high level alarms in the event of over-pressure.

Operational areas of the site are self-contained and will benefit from an impermeable concrete surface which will prevent the release of potentially polluting liquids to surface water and groundwater. Secondary containment will be provided for all tanks containing liquids whose spillage could be harmful to the environment. The proposed bund is designed to hold a minimum of 110% of the capacity of the largest tank or 25% of total tank volume, whichever is the greater. All bunding will be designed and constructed in accordance with the CIRIA C736 – Containment Systems for the Prevention of Pollution - secondary, tertiary and other measures for industrial and commercial premises or other relevant industry standard and will be lined with 2mm thick HDPE liner of landfill specification (Enviroseal). We have included Pre-operational condition (PO1) which requires the submission of a report confirming the construction and integrity of the earth bund is fit for purpose and in accordance with industry standards prior to the commencement of site operations. This will ensure that the proposed earth bund is properly designed to minimise risks to the environment and reduce the risks of accidents and their consequences.

Additional measures proposed by the Applicant include:

- Daily visual inspection of all parts of the Installation by site personnel to check activities, drainage, litter, fugitive releases.
- Waste handling and treatment processes shall be undertaken in an enclosed building.
- Waste shall not be stored or processed external to the reception building.
- Roller shutter door of the reception building will remain closed when waste is being deposited. This will assist in the prevention of odours escaping the reception building.
- All vehicles leaving operational areas will be cleaned before leaving the site to ensure that loose waste and/or mud are not exported from the site onto public roads.
- The waste treatment processes will benefit from a number of process control features and prevent the development of abnormal operating conditions. Operations will be controlled and monitored using the Supervisory Control and Data Acquisition (SCADA) system which creates documentation that can be accessed in remote locations. The system will provide a range of control and monitoring functions that automate and monitor actions throughout the plant. These procedures are designed to ensure the integrity of the plant throughout the life of the facility.

The Environment Agency considers that the Applicant has proposed appropriate measures to minimise the impact of fugitive emissions from the facility. The Permit conditions (3.2.1 to 3.2.3) are sufficient to ensure that emissions of substances not controlled by emission limits do not cause pollution. The Applicant is

required to submit an emissions management plan and implement the mitigation measures, in the event activities on site are causing pollution.

10. Noise Emissions

The Application contained a noise impact assessment which identified local noise-sensitive receptors, potential sources of noise at the proposed plant and noise attenuation measures. The key sources of noise were identified as the plant associated with the feedstock movement, mixing and biogas generation e.g. flare, solids feeder, macerator, pump recirculation and compressor. The CHP gas engine is to be housed within sound insulated container as is the compressor. Whilst the assessment did not include on-site vehicle movements, vehicle movements will only take place during the day and are restricted by the planning consent.

Measurements were taken of the prevailing ambient noise levels from a comparable local site to produce a representative baseline noise survey and an assessment was carried out in accordance with BS 4142:2014 to compare the predicted plant rating noise levels with the established background levels. Background noise measurements ranged from 41 LA90TdB (night-time) to 46 LA90TdB (day-time).

The noise assessment showed that noise levels resulting from onsite activities would be below existing background levels at all modelled receptors both during day-time and night-time. On this basis, the applicant concluded that noise from the proposed facility will not have an adverse impact upon nearby human receptors.

We made a number of observations on the approach and assumptions used by the applicant, and undertook our own check modelling.

Firstly we noted that the flare whilst listed as a noise source it was not included in the noise assessment as the applicant maintained that the "Uniflare" will rarely be used and only in an emergency. Notwithstanding this comment we would still expect modelling to be undertaken on the operation of flare during maintenance/plant breakdown.

We also noted that single band noise level for their noise attenuation calculations (assuming all noise levels are at one frequency). Fans extracting air from reception hall to biofilter and the flare are often tonal. Where available we would expect the octave band spectrum to be used, as noise attenuation is dependent on frequencies and can have a significant effect. The risk assessment hasn't taken this into account and additional mitigation may be required.

Finally we noted that background levels were highly variable and may not be representative.

We put our concerns to the applicant via a Schedule 5 dated 16/06/2016 and email of 20/06/2017. The applicant responded by email on the 22/06/2017 stating that the compressors and the pump recirculation units, shown in the table 4 of the Sound Impact Assessment dated 30th September 2015 produced by ESG below, are not going to be present on site, removing 2 of the loudest components will reduce noise levels at the site. The applicant declined to undertake additional background monitoring requesting that this be undertaken as a pre-operation condition.

Notwithstanding the above comments in our sensitivity check modelling we accept that the noise levels used by the applicant fall within the typical range for those plant and do not affect the consultant's conclusions, however emissions could be higher if alternative equipment or building specifications were selected. Therefore we have decided to include pre-operational condition, PO4 in the permit that requests the operator to provide evidence that plant installed does not result in noise levels greater than those modelled, that the operator re-assess the noise impact using actual noise levels representative of the plant installed and dependent on the results of the revise the noise impact assessment produce revise the noise management plan.

11. Accident Management

The Applicant submitted an environmental risk assessment with the application which outlined possible risks from the operation of the facility and control measures. We considered the plan lacked sufficient detail and the Applicant was requested to resubmit a revised plan as part of a Schedule 5 request for further information dated 28/07/16. The Applicant responded to this request and submitted a revised accident management plan on 26/06/17 forming part of their EMS. Having considered the Plan and other information submitted in the Application, we are satisfied that appropriate measures will be in place to ensure that accidents that may cause pollution are prevented but that, if they should occur, their consequences are minimised. The accident management plan will form part of the Environmental Management System required by Permit condition 1.1.1(a)

12. Fire Prevention Plan

We do not require an FPP for a wet AD process. This is because the waste delivered to the site is wet and is rapidly introduced into the process so there is little chance of it combusting. The biogas is covered by a number of existing regulations (e.g. The Dangerous Substances and Explosive Atmospheres Regulations – DSEAR) and so has adequate safeguards in place. The other output, i.e. digestate, is wet and unlikely to combust.

13. Monitoring and compliance

We have specified that monitoring should be carried out for the parameters listed in Schedule 3 table S3.1, S3.2 and S3.3 using the methods and to the frequencies in those tables. These monitoring requirements have been imposed in order to demonstrate compliance with emission limit values.

13.1. Air

Annual monitoring of emissions (Table S3.1) from the CHP engine and flare will be undertaken by MCERTS accredited personnel using MCERTS approved methods. The Environment Agency has specified that monitoring of the CHP engine should be carried out in accordance with emission standards in LFTGN 08 - Guidance for monitoring landfill gas engine emissions (see Table 3 below) and the monitoring requirements of M2 - Technical Guidance Note, Monitoring of stack emissions to air.

Table 3 - Summary of emissions testing requirements for the CHP engine

| Parameter | Emission standard (mg/m ³) |
|----------------------------------|--|
| Nitrogen oxides | 500 |
| Carbon monoxide | 1400 |
| Total volatile organic compounds | 1000 |
| Sulphur dioxide | 350 |

We have also specified in the permit that emissions testing on the emergency flare should be undertaken 12 months following commissioning and then in the event the flare has been operational for over 10% of the year (876 hours). Guidance for monitoring enclosed landfill gas flares (LFTGN 05) sets out the emission standards for enclosed landfill gas flares (see Table 4 below).

Table 4 – Summary of emissions testing requirements for the landfill gas flare

| Parameter | Emission standard (mg/m ³) |
|---------------------------------------|--|
| Oxides of nitrogen as NO ₂ | 150 |
| Carbon monoxide | 50 |
| Total volatile organic compounds | 10 |

An auxiliary boiler (with a thermal rating of 0.6 MWth) is a self-contained package that will be used for commissioning of the plant. It is therefore considered that the boiler will be activated for only short periods. We have not set any monitoring requirements on the auxiliary boiler on the basis of infrequent use.

We have also specified in the permit that emissions testing on the emergency flare should be undertaken 12 months following commissioning and then in the event the flare has been operational for over 10% of the year (876 hours). Guidance for monitoring enclosed landfill gas flares (LFTGN 05) sets out the emission standards for enclosed gas flares (see Table 5 below).

Table 5 - Emission Standards for Enclosed Gas Flares

| Parameter | Emission standard (mg/m ³) |
|---------------------------------------|--|
| Oxides of nitrogen as NO ₂ | 150 |
| Carbon monoxide | 50 |
| Total volatile organic compounds | 10 |

13.2. Biogas Upgrading Plant

As part of a Schedule 5 request for further information dated 28/07/2016, the Operator was requested to submit a detailed process description of the techniques to be used in the biogas upgrading plant as part of the permit application, including the composition of the off-gas and its final fate.

As part of the response, the operator provided a full process description and comparison against other BAT technologies (Biogas Upgrade Technology Comparison dated 30/09/16) confirming that the proposed biogas upgrading technique will be a chemical system using Purac Puregas' CAPure 2014-11-26 unit. The Environment Agency considers the use of such plant to represent BAT at this Installation.

In order to verify the assumptions made in the application in relation to the releases to air from the upgrading plant, we have included two improvement conditions within the EPR permit IC4 and IC5 which require the operator to undertake sampling in accordance with MCERTS standards (Total volatile organic compounds and hydrogen sulphide) having regard to Environment Agency technical guidance M2 and provide an impact assessment of point source emissions to air using the information obtained through the emissions monitoring. This is proportionate to the process to ensure that impacts from the gas upgrading plant are minimised.

Following the review of the results from the monitoring survey and impact assessment, the Environment Agency shall consider whether emission limits are appropriate at emission point A5. In the event the emission limits are not considered necessary, the use of surrogate monitoring shall be employed. We have used this approach for all AD facilities operating biogas upgrading plants in England.

13.3. Process monitoring

We have specified monitoring of the AD process as a whole (see Table S3.3 in the permit). This includes monitoring of key digestion parameters, daily olfactory checks and structural integrity checks of the digesters and storage tanks. These monitoring checks are included to ensure that any malfunction of plant/equipment on site are detected early to reduce serious pollution.

Decision checklist

| Aspect considered | Decision |
|--------------------------------------|--|
| Receipt of application | |
| Confidential information | A claim for commercial or industrial confidentiality has not been made. |
| Identifying confidential information | We have not identified information provided as part of the application that we consider to be confidential. The decision was taken in accordance with our guidance on confidentiality. |
| Consultation | |
| Consultation | The consultation requirements were identified in accordance with the Environmental Permitting Regulations and our public participation statement. The application was publicised on the GOV.UK website. We consulted the following organisations: <ul style="list-style-type: none"> • Mid Devon Council – Environmental Health • Mid Devon Council – Planning • Director of Public Health • Food Standards Agency (FSA) • Public Health England (PHE) • Health and Safety Executive (HSE) The comments and our responses are summarised in the consultation section . |
| Operator | |
| Control of the facility | We are satisfied that the applicant (now the operator) is the person who will have control over the operation of the facility after the grant of the permit. The decision was taken in accordance with our guidance on legal operator for environmental permits. |
| The facility | |
| The regulated facility | We considered the extent and nature of the facility at the site in accordance with RGN2 'Understanding the meaning of regulated facility', Appendix 2 of RGN 2 'Defining the scope of the installation', Appendix 1 of RGN 2 'Interpretation of Schedule 1', guidance on waste recovery plans and permits. The extent of the facility is defined in the site plan and in the permit. The activities are defined in table S1.1 of the permit. |

| Aspect considered | Decision |
|---|---|
| The site | |
| Extent of the site of the facility | The operator has provided a plan which we consider is satisfactory, showing the extent of the site of the facility. The plan is included in the permit. |
| Site condition report | The operator has provided a description of the condition of the site, which we consider is satisfactory. The decision was taken in accordance with our guidance on site condition reports and baseline reporting under the Industrial Emissions Directive. |
| Biodiversity, heritage, landscape and nature conservation | The application is not within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat. |
| Environmental risk assessment | |
| Environmental impact assessment | <p>In determining the application we have considered the Environmental Statement.</p> <p>We have also considered the planning permission and the committee reports 15/00064/DCC dated 26th May 2015 Devon County Council approving it and an amendment to the design of the plant was granted on 9th June 2016, reference DCC/3850/2016.</p> |
| Environmental risk | <p>We have reviewed the operator's assessment of the environmental risk from the facility.</p> <p>The operator's risk assessment was unsatisfactory and required additional Environment Agency assessment. See Key issues.</p> <p>The H1 assessment and modelling shows that, applying the conservative criteria in our guidance on environmental risk assessment supplied by the operator and reviewed by ourselves, all emissions may be categorised as environmentally insignificant with the exception of NO₂, VOCs (as Benzene) and NO.</p> <p>For these emissions, we have carefully scrutinised the Applicant's proposals to ensure that they are applying the Best Available Techniques to prevent and minimise emissions of these substances. See below. The conclusion is that there will be no significant impact to human health caused by the operation of the AD facility.</p> |
| Operating techniques | |
| General operating techniques | <p>We have reviewed the techniques used by the operator and compared these with the relevant guidance notes</p> <ul style="list-style-type: none"> • Sector Guidance Note IPPC S5.06 – Guidance for the Recovery and Disposal of Hazardous and Non-Hazardous Waste; • Draft Guidance, How to comply with your environmental permit. Additional |

| Aspect considered | Decision |
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| | <p>guidance for: Anaerobic Digestion.</p> <ul style="list-style-type: none"> • How to Comply with Your Environmental Permit and H4 – Odour Management. <p>And we consider them to represent appropriate techniques for the facility. The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.</p> |
| Operating techniques for emissions that do not screen out as insignificant | <p>Emissions of NO₂, VOCs (as Benzene) and NO cannot be screened out as insignificant. We have assessed whether the proposed techniques are BAT.</p> <p>The proposed techniques/ emission levels for emissions that do not screen out as insignificant are in line with the techniques and benchmark levels contained in the technical guidance and we consider them to represent appropriate techniques for the facility. The permit conditions ensure compliance with relevant BREFs and ELVs deliver compliance with BAT-AELs.</p> |
| Operating techniques for emissions that screen out as insignificant | <p>Emissions of CO and SO₂ have been screened out as insignificant, and so we agree that the applicant's proposed techniques are BAT for the installation.</p> <p>We consider that the emission limits included in the installation permit reflect the BAT for the sector.</p> |
| Odour management | <p>We have reviewed the odour management plan in accordance with our guidance on odour management. See key issues section 6</p> <p>We consider that the odour management plan is satisfactory.</p> |
| Noise management | <p>We have reviewed the noise management plan in accordance with our guidance on noise assessment and control.</p> <p>We consider that the noise management plan is satisfactory.</p> |
| Permit conditions | |
| Use of conditions other than those from the template | <p>Based on the information in the application, we consider that we do not need to impose conditions other than those in our permit template.</p> |
| Raw materials | <p>We have specified limits and controls on the use of raw materials and fuels. These include Grass & Maize silage, beet and wheat grain</p> |
| Waste types | <p>We have specified the permitted waste types, descriptions and quantities, which can be accepted at the regulated facility.</p> <p>Farm Yard Manure (02.01.06);</p> <p>We are satisfied that the operator can accept these wastes for the following reasons:</p> |

| Aspect considered | Decision |
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| | <ul style="list-style-type: none"> • They are suitable for the proposed activities. • The proposed infrastructure is appropriate. • The environmental risk assessment is acceptable. |
| Pre-operational conditions | <p>Based on the information in the application, we consider that we need to impose pre-operational conditions.</p> <ul style="list-style-type: none"> • Method of construction and integrity of the proposed site secondary containment is in accordance with relevant industry standards (PO1). • A commissioning plan appropriate management systems and management structures are in place to ensure compliance with all the permit conditions (PO2). • To provide evidence to the Technically Competent Manager (TCM) at the proposed installation (PO3). • To demonstrate that equipment installed and operations are within levels predicted in the Sound Impact Assessment (PO4). • Baseline monitoring of biofilter is carried out (PO5). |
| Improvement programme | <p>Based on the information on the application, we consider that we need to impose an improvement programme.</p> <p>We have imposed an improvement programme to ensure that:</p> <ul style="list-style-type: none"> • Through actual monitoring data the assumptions made in the application in relation to the point source releases to air can be verified as representative (IC1 and IC2). • To review the effectiveness of the odour mitigation measures (IC3). • To undertake quantitative impact assessment of emissions of bioaerosols (IC4) |
| Emission limits | <p>See section 13 on Monitoring and Compliance in Key Issues</p> <p>The following substances (Nitrogen oxides, Sulphur dioxide, Carbon monoxide, Total volatile organic compounds) have been identified as being emitted in significant quantities and ELVs, based on BAT have been set for those substances with respect to air emissions. See Table S3.1</p> <p>It is considered that the ELVs described above will ensure that significant pollution of the environment is prevented and a high level of protection for the environment secured.</p> <p>The substances above have been set at the benchmark levels quoted in LFTGN 08: Guidance for monitoring landfill gas engine emissions and Guidance for monitoring enclosed landfill gas flares (LFTGN 05).</p> |

| Aspect considered | Decision |
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| Monitoring | <p>We have decided that monitoring should be carried out for the parameters listed in the permit, Schedule 3 using the methods detailed and to the frequencies specified.</p> <p>These monitoring requirements have been imposed in order to ensure emissions are within the permitted limits.</p> <p>We made these decisions in accordance with Environment Agency Draft Technical Guidance for Anaerobic Digestion (Reference LIT 8737, November 2013) and M9 for the Environmental monitoring of bioaerosols at regulated facilities.</p> <p>Based on the information in the application we are satisfied that the operator's techniques, personnel and equipment have either MCERTS certification or MCERTS accreditation as appropriate.</p> |
| Reporting | <p>We have specified reporting in the permit, to ensure data is reported to enable timely review by the Environment Agency to ensure compliance with permit conditions and to monitor the efficiency of material use and energy recovery at the Installation. Monitoring of point source emissions to air is only required annually, reporting is also required annually. Reporting forms have been prepared to facilitate reporting of data in a consistent format. These reporting requirements are deemed sufficient and proportional for the Installation.</p> <p>We made these decisions in accordance with How to Comply with your Environmental Permit (this guidance has now been translated to webpages on Gov.UK).</p> |
| Operator competence | |
| Management system | <p>There is no known reason to consider that the operator will not have the management system to enable it to comply with the permit conditions.</p> <p>The decision was taken in accordance with the guidance on operator competence and how to develop a management system for environmental permits.</p> |
| Technical competence | <p>Technical competence is required for activities permitted.</p> <p>The operator is a member of an agreed scheme.</p> <p>We are satisfied that the operator is technically competent.</p> |
| Relevant convictions | <p>The Case Management System and National Enforcement Database have been checked to ensure that all relevant convictions have been declared.</p> <p>No relevant convictions were found. The operator satisfies the criteria in our guidance on operator competence.</p> |

| Aspect considered | Decision |
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| Financial competence | There is no known reason to consider that the operator will not be financially able to comply with the permit conditions. |
| Growth Duty | |
| Section 108 Deregulation Act 2015 – Growth duty | <p>We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit.</p> <p>Paragraph 1.3 of the guidance says:</p> <p>“The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation.”</p> <p>We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections.</p> <p>We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This also promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.</p> |

Consultation

The following summarises the responses to consultation with other organisations, our notice on GOV.UK for the public and the way in which we have considered these in the determination process.

Responses from organisations listed in the consultation section

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| Response received from |
| Mid Devon Council – Environmental Health email dated 01/06/2016 |
| Brief summary of issues raised |
| The groundwater abstraction point is in use by the abattoir, suggest therefore that further protective measures may be required to protect the local groundwater supply |
| Summary of actions taken or show how this has been covered |
| Operations at the abattoir are covered by a separate Permit EPR-QP3633GP held by 2 Sisters Food Group Ltd. Our consideration of the measures taken to protect the local water supply are discussed in Fugitive Emissions to Air, Land and Water Sections of the key issues of this document. |

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| Response received from |
| Public Health England dated 17/06/2016 |
| Brief summary of issues raised |
| <p>Noted that the applicant has undertaken an odour and bio aerosol assessment for the operation of the AD process and has concluded that the proposed operation will not have a significant impact in terms of odour or bio aerosols.</p> <p>Noted that the no modelling has been undertaken and whilst they accept that the proposed AD plant will be a closed system and the risk from fugitive emissions will be low they request that that the Regulator ensure that the proposed control measures are sufficient to ensure that emissions from the site will not have a significant impact on local air quality.</p> <p>PHE concludes that provided the site complies in all respects with the Environmental Permitting (England and Wales) Regulations 2010, together with good management, then the site will present a low risk to local human receptors.</p> |
| Summary of actions taken or show how this has been covered |
| <p>Appropriate conditions have been included in the Environmental Permit to address issues raised by the PHE:</p> <p>We have accepted an odour management plan (OMP). The operator is required to follow this OMP.</p> <p>In view that there are sensitive receptors within 100m of the site and in line with our new Technical Guidance Note (M9) for the Environmental monitoring of bioaerosols at regulated facilities , bioaerosols monitoring is now a requirement of the permit. This includes a requirement to undertake background sampling of bioaerosols upwind of the plant. Bioaerosols threshold limits will be set following the completion of Improvement condition IC4.</p> |

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| Response received from |
| Mid Devon Council – Planning |
| Brief summary of issues raised |
| Request clarification on the groundwater abstraction point still being used by the abattoir, suggest therefore that further protective measures may be required to protect the local groundwater supply. |
| Summary of actions taken or show how this has been covered |
| As above |